Section 1 Introduction & Technical Data

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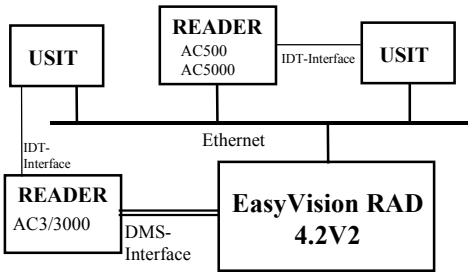
1. INTRODUCTION

EasyVision RAD release 4.2V2 is a new acquisition system for X-Ray images exposed on Fuji Imaging plates and read out by Fuji readers and an image processing system with printing capabilities as well. With this new hardware and software generation readers connect with both local parallel (DMS) interface and via Ethernet to an EasyVision RAD.

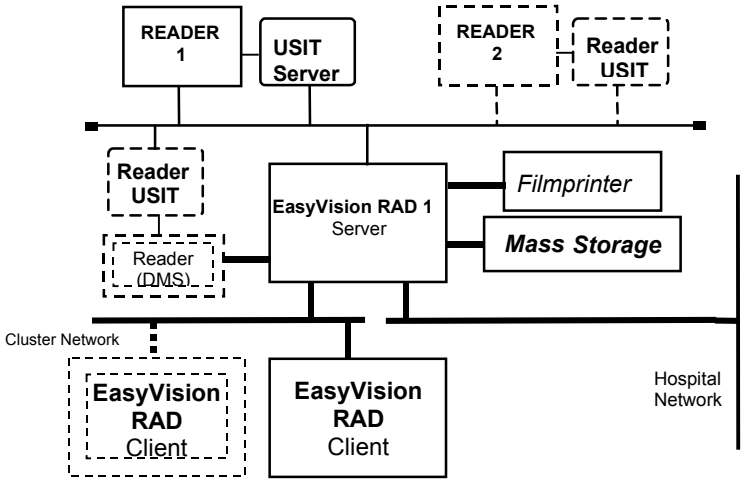


Moreover the EasyVision RAD 4.2V2 supports multi reader configurations with:
- 1 DMS Reader
- n Network Readers

dependent on the performance of the hardware used.
This way, for one or more readers including USITs, a single EasyVision workstation may be sufficent.

The Single User Workstation
If there is only one EasyVision connected to one or more readers/USITs, the situation is like that before release 4.2. To differentiate between such a single EasyVision RAD and those in a cluster configuration, we call the single system a *Single User Workstation.*

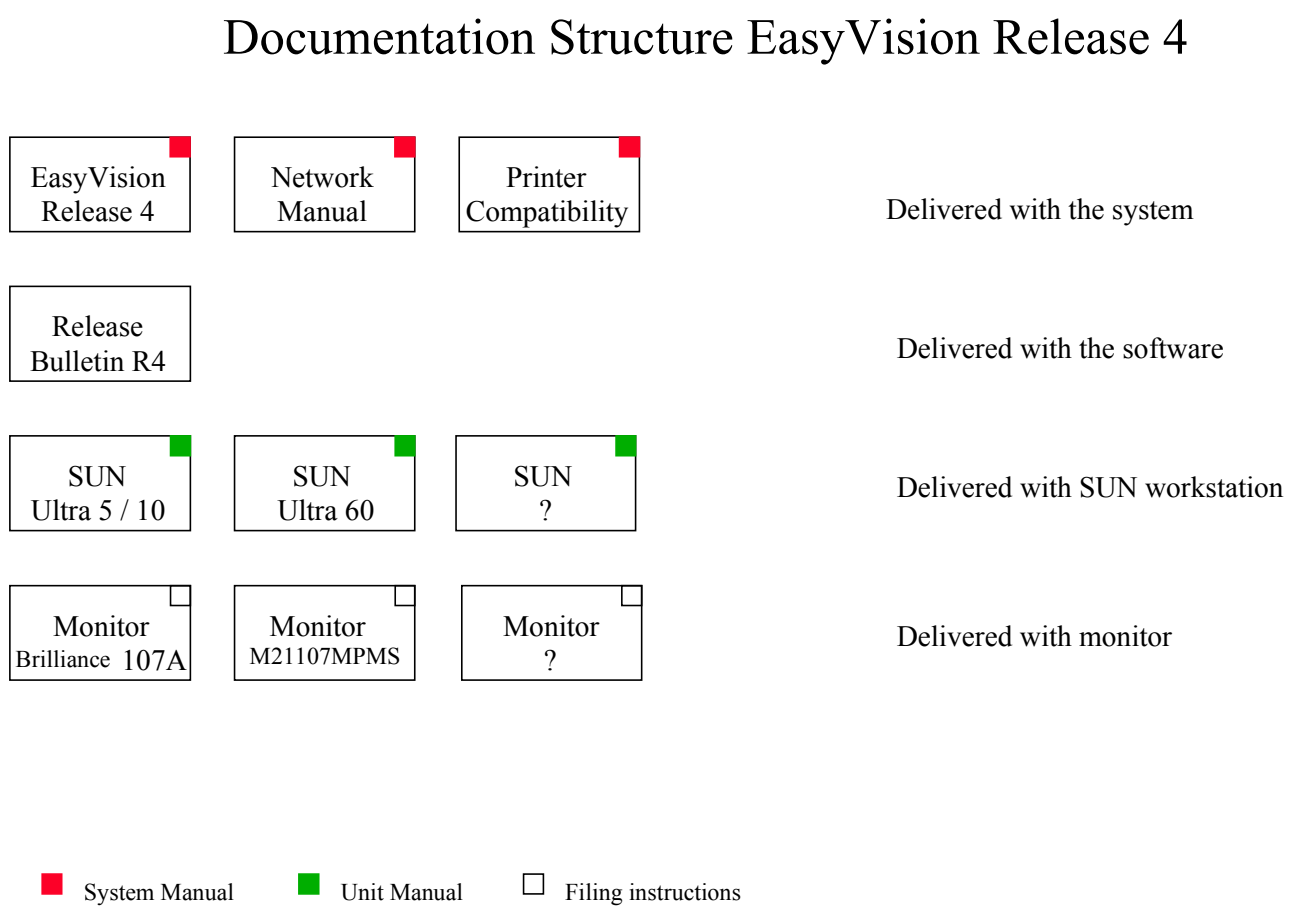
The EasyServer
Within an EasyVision RAD cluster, the EasyVisions use a common place to store their images. The system which does this is called the *EasyServer*. It controls the configuration of the cluster by controlling the software licenses, it handles the import from modalities, the printing to film, and all communication outside the cluster, for instance with the archive, external DICOM databases, or other clusters and workstations of other vendors.



The Workspot (Client)
The *EasyServer* makes all images available to all EasyVisions in the cluster. The EasyVisions which also run the RAD applications (the *Workspots*) don't have an own image database and use the image database of the RAD server. The hardware configuration of the Workspot may vary from an UltraSparc 60 with lots of memory for fast and intensive image postprocessing, to a PC with a Java enabled Web Browser for basic image viewing.

1.1. ABOUT DOCUMENTATION STRUCTURE

This manual describes the EasyVision Release 4 architecture with its variety of hardware components. With the introduction of Release 4 a new documentation structure has been set up. From now on a system approach is chosen to deliver the appropriate documentation with the ordered configuration.



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1.1. TECHNOLOGY

Up to now EasyVision products are mostly sold and used as "stand alone" workstations: The information (data) that is used by the user during the work on an EasyVision, normally resides on the EasyVision itself (in the database of the EasyVision).
Data can be imported from other sources (modalities or other workstations) and stored in the EasyVision database for use. Very often, the source(s) is (are) very determined, and (because of the modality-orientation of the EasyVision products) have a dedicated link to the EasyVisions (this can be a small, separate network also).

EasyVision Release 4 is based on a client/server computing technology. This means a different configuration will appear: Users on a workspot, use information that resides in a database on a central server and is received from a larger variety of sources.

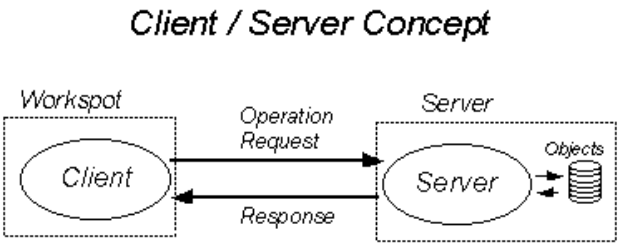

Figure 1: Client/Server Concept

1.1.1. SYSTEM LEVEL DESCRIPTION

On system level two different kind of configurations are possible:
- standalone system
- server system and workspots

Standalone configuration:

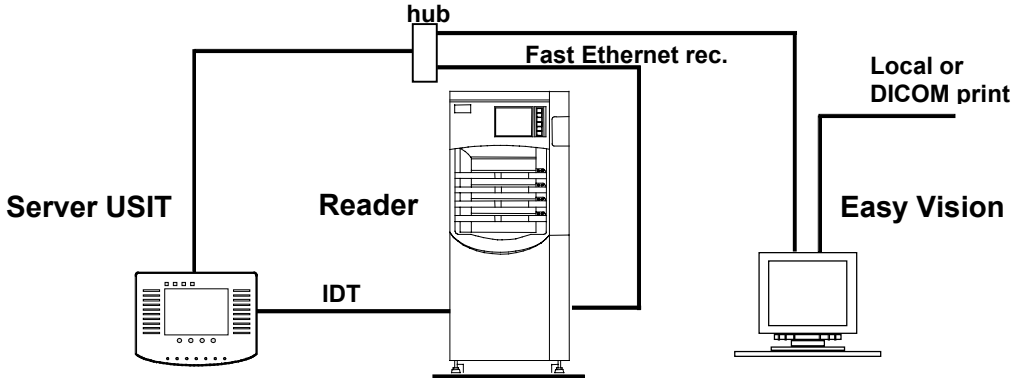

Figure 2: Standalone configuration

PCR Cluster configuration:

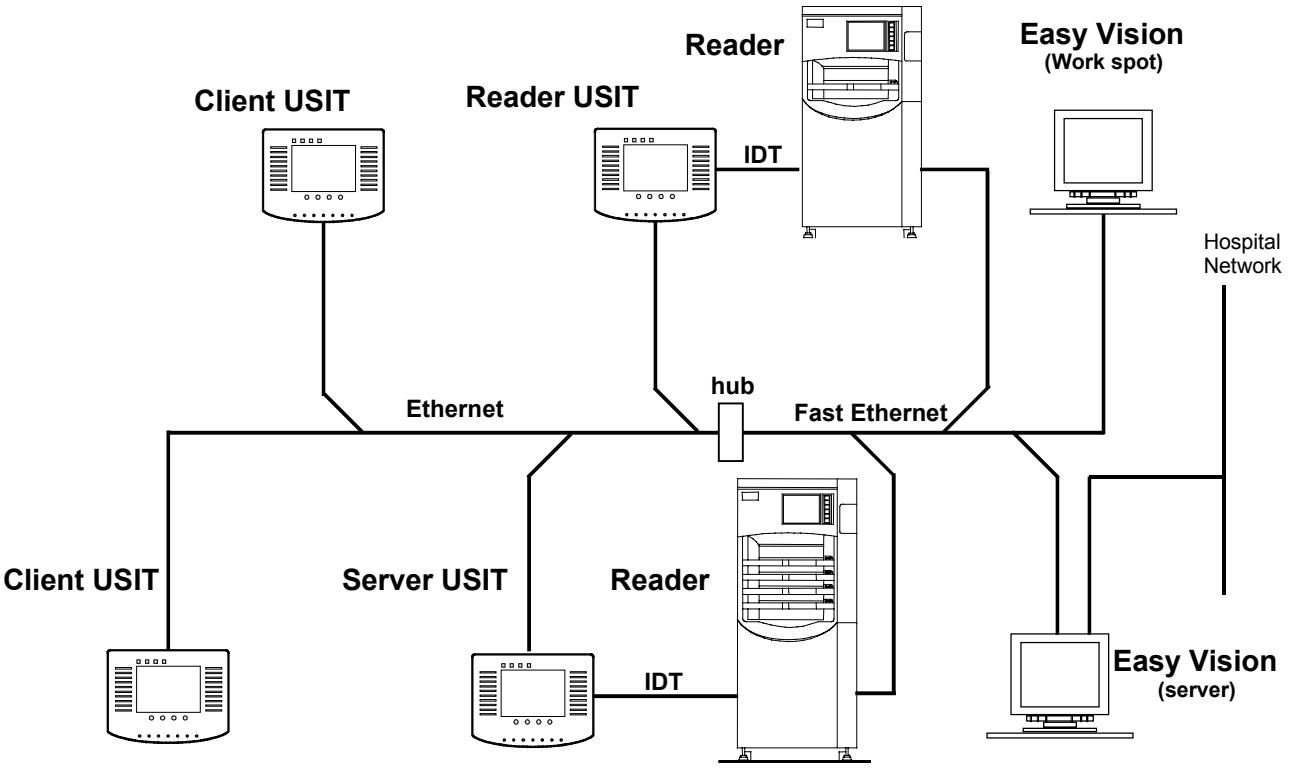

Figure 3: PCR Cluster, Multi Reader, Multi Terminal Configuration

1.2. TOOLS

To remove and replace EasyVision Release field replaceable units (FRUs), you will need the following tools and materials:

- Standard toolkit
- Anti-static discharge kit
- Service PC + null modem cable (25pin) for back-up of configuration files.
  See Remote Service Manual for pin layout)
- Densitometer for laserprinter (e.g. X-Rite 331)
- Reflection densitometer for paperprinter (e.g. X-Rite 400)
- Hardcopy Unit test box
- Printer test tool
- Monitor maintenance kit
- Multimeter.

Also useful:
- Pallet truck

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2. VERSIONS

The new PCI based systems deviate on several point from the Sbus based systems.

	PCI	
Workstation enclosures	Desktop Tower	Ultra 5 Ultra 10, Ultra 60
Maximum operating temperature	40 ºC 40 ºC	Ultra 5, Ultra 10 Ultra 60
Internal disk/cdrom controller	EIDE SCSI	Ultra 5, Ultra 10 Ultra 60
Operating System version I/O bus	Solaris 2.6 PCI	

2.1. PRODUCT

EasyVision RAD Release 4.2V2Lx

2.2. MANUAL

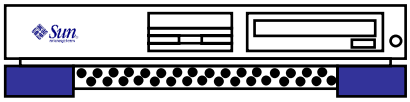
Service Manual EasyVision Release 4
12NC: 4512 984 22361
Version (99.0) see page 2.1 of manual
First edition

2.3. COMPATIBILITY

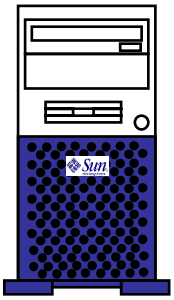
See Release Bulletin EasyVision RAD Release 4.2.V2. for compatibility list.

See Service Manual System - Imager Compatibility R4.2.V2 for printer compatibility list.

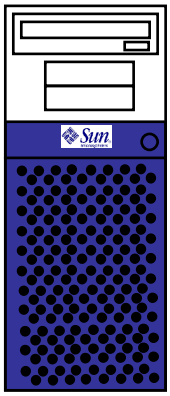
3. COMPUTERS



Ultra 5



Ultra 10



Ultra 60

Ultra 5: The SUN Ultra 5 is the entry level PCI based UltraSPARC workstation/server providing Ultra Power at the same cost as a PC

Ultra 10: The SUN Ultra 10 is a single processor PCI based workstation/server using the UltraSPARC-II 64-bit architecture. The system has a PC style mini-tower layout.

Ultra 60: The SUN Ultra 60 is PCI based workstation using the UltraSPARC-II 64-bit architecture. The system has a PC style mini-tower layout and is functionally equivalent to the Sbus based Ultra 2 workstation.

3.1. OVERVIEW SUN STATION CONFIGURATION

	Ultra 5	**Ultra 10**	**Ultra 60**
onboard SCSI-interface	no	no	Ultra SCSI, 40 MB/sec
IDE-interface	EIDE, 33 MB/sec	EIDE, 33 MB/sec	No
Ethernet-interface	10/100 Mbit / sec	10/100 Mbit /sec	10/100 Mbit /sec
Min memory	256 MB (2x128)	256 (2x128 MB)	256 MB (4x64MB)
Max. memory	384- /512 MB	384-/512-/768 MB	512-/ 768-/ 1024 MB 768-/ 1280- / 1792 MB
Memory module	64-/ 128 MB	64- / 128- / 256 MB	64- / 128 MB
Memory bank config.	2 banks x 2 slots	2 banks x 2 slots	4 banks x 4 slots
Internal disk	EIDE, 4.3 GB	EIDE, 9.1 GB	Ultra-SCSI, 9.1 GB (360 MHz) 4.3 GB (300 MHz)
Internal CDRom	EIDE, 24x	EIDE, 24x	No
External I/O slots	3x PCI	4x PCI	4x PCI
Framebuffers	Yes, 8 bit	Yes, 8 bit	No
UPA slot (for 24 bits framebuffer)	no	Yes, 1	Yes, 2

Table 1: Overview system configuration

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4. EASYVISION CONFIGURATIONS

4.1. STANDALONE CONFIGURATION

entry level	Ultra 5	270 MHz
advanced	Ultra 10	300 MHz
turbo	Ultra 60	360 MHz

4.1.1. PCR STANDALONE CONFIGURATION

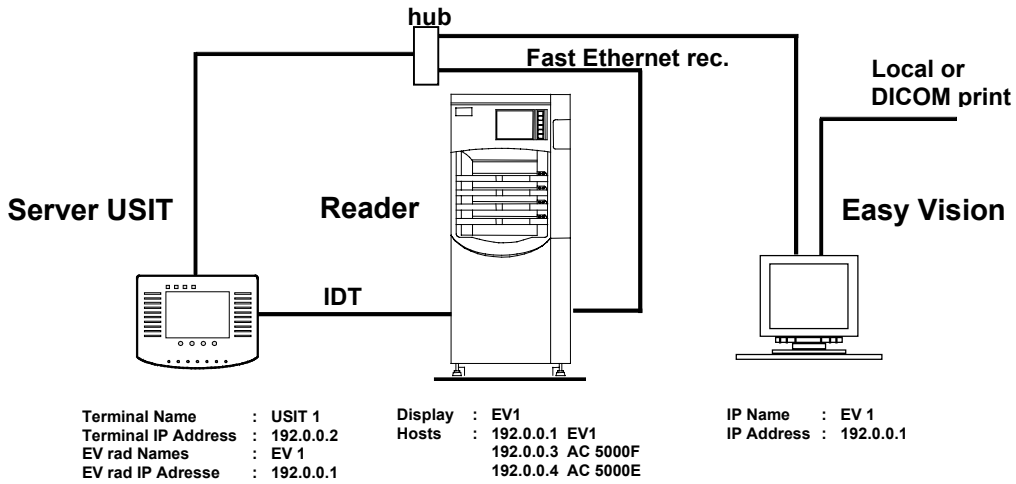

Figure 4: PCR standalone Configuration

Notes: This configuration requires additional hardware (HUB)
The UltraSPARC has an onboard 10/100 Mbit ethernet interface.

4.1.2. CLIENT / SERVER PCR CONFIGURATION

For the server system computing power two classes are specified:

entry level	UltraSPARC 10	300 MHz
advanced	UltraSPARC 60	360 MHz

For the workspot computing power three classes are specified:

entry level	Ultra 5	270 MHz
advanced	Ultra 10	300 MHz
turbo	Ultra 60	360 MHz

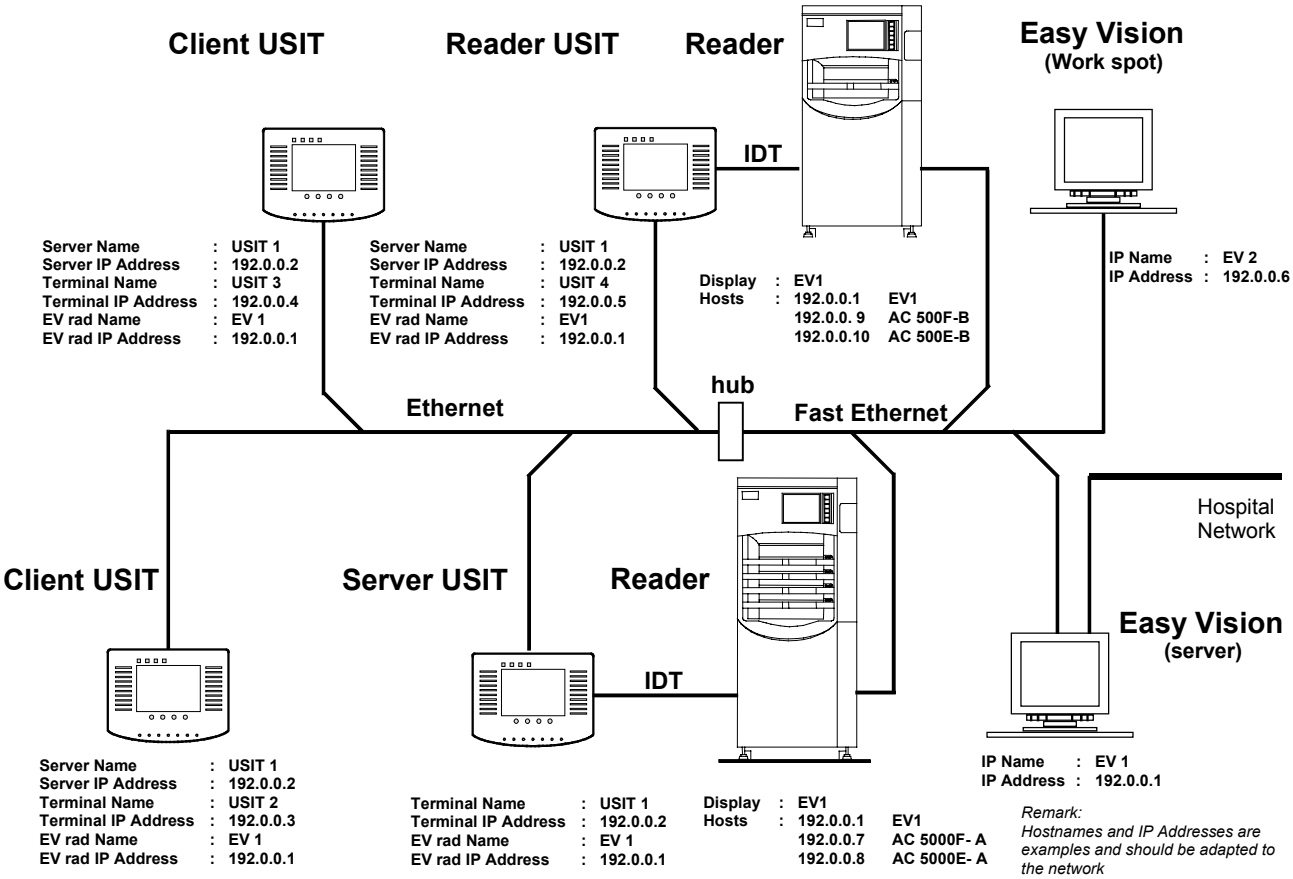

Figure 5: PCR Server-Client Multi Reader Multi USIT System

Notes: An optional single 10/100 Mbit ethernet interface card is needed to connect to hospital network
This configuration requires additional hardware (HUB) and may be used to connect further EasyVision RAD clients and USITs.
The UltraSPARC has an onboard 10/100 Mbit ethernet interface.
The maximum length of the network cables is *100 meters*.

5. NETWORK CONNECTIONS

Building blocks to build a network, like hubs, switches and other related parts, are **NOT** part of the EasyVision Release 4 delivery. These parts have to be purchased locally, however, the manuals: Planning Reference Book Networking and the system manual Networking will advice to install a network.

5.1. CLIENT SERVER CLUSTERS

In this cluster concept two networks are determined.

- network, which is based on: 10 / 100 Mbit Base-T(X) ethernet.
- network, which is based on: (preferred) 100 Mbit Base-T(X) ethernet.

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6. SAFETY REQUIREMENTS

6.1. ELECTROSTATIC DISCHARGE

For your protection, observe the following safety requirements:

- Follow all cautions, warnings, and instructions marked on the equipment.
- Ensure that the voltage and frequency rating of the power outlet matches the electrical rating labels on the system.
- Use properly grounded power outlets.

To protect both yourself and the equipment, observe the safety precautions listed in the following table:

Item	Problem	Precaution
AC Power Cord	Electric shock	Unplug the AC power cord from the wall socket before working on the power supply
	Grounding	Leave the AC power cord plugged into the wall socket when replacing drives, DSIMMs, chips or the system board. This provides a grounding path for the wrist strap, which must be attached.
Wrist strap	Electrostatic discharge (ESD)	Wear a wrist strap when handling printed circuit boards, drives or other components.
ESD mat	ESD	An approved anti-static mat provides protection from static damage when used with a wrist strap. The mat also cushions and protects small parts attached to the printed circuit boards.
Printed circuit boards		Handle a printed circuit by its edges only. Store boards in an anti-static bag.
Cover	System damage and overheating	Replace the cover after working on the system.
Sbus slot filler panels		Install filter panels in all unused Sbus openings. Openings on the rear of the system board reduce the cooling capacity of the system.
MicroSPARC chip heat sink	Heat, burns	Do not touch the heat sink on the microSPARC chip. The heat sink can be hot enough to cause burns.

6.2. ELECTROSTATIC DISCHARGE (ESD) REQUIREMENTS

The system chassis power must be switched off, and the AC power cord must remain plugged in to ensure a proper ground.
To minimize electrostatic discharge, observe the following precautions:

- Hold the system board, SBus cards, DSIMMs, or system components only by the edges.
- When removing a board, card, or module from an antistatic bag, lay it on an antistatic surface such as a ESD mat, an antistatic bag, or a disposable antistatic mat.
- Do not place the boards, cards, or modules on an unprotected surface. Use a cushioned antistatic mat or antistatic bag. Connectors and components have very thin pins that bend easily.
- Do not use an oscilloscope or VOM (volt-ohmmeter) probe on the components. The soldered pins are easily damaged or shorted by the probe point.
- Transport boards, cards, or modules in an antistatic bag.
- Always wear an antistatic wrist strap connected to a metal surface on the chassis when working on system components and parts.

7. EASYVISION TECHNICAL PRODUCT DATA

7.1. FRAMEBUFFERS

	Color			Greyscale
	PseudoColor PGX(+)	Pseudo Color PCI/PGX(+)	TrueColor UPA/FFB	MD2/PCI
Ultra 5 (3x PCI only)	Onboard*	1x	No	1x
Ultra 10 (4xPCI + 1x UPA)	Onboard*	3x	1x	2x
Ultra 60 (4xPCI + 2x UPA)	No	No	2x	2x

- The Ultra 5 and Ultra 10 configuration have an onboard framebuffer which can not be removed.
- EasyVision can not handle a mix of different types of framebuffers.

7.2. MONITORS

Framebuffer type	Display matrix: 1280 x 1024 Landscape oriented		
	Color Monitors		Greyscale monitors
	17" Color	21" Color	21" Greyscale
Pseudo Color (PGX(+) single head	Yes	Yes	Yes,
True Color (FFB) single head	Yes	Yes	Yes,
Greyscale (Md2) dual head	No	No	Yes

7.3. OPTICAL MEDIA DRIVES

EasyStore OD Drive	EasyStore CD-R Drive
Pioneer DE-UH710 600MB	Philips CDD 2600/3600

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7.4. MEMORY BANK CONFIGURATIONS

Ultra 5

	Slot 1	Slot 2
Bank 1	128	128
Bank 2	128	128

Ultra 10

	Slot 1	Slot 2
Bank 1	128	128
Bank 2	128/256	128/256

Ultra 60

	Slot 1	Slot 2	Slot 3	Slot 4
Bank 1	32	32	32	32
Bank 2	32	32	32	32
Bank 3	64/128	64/128	64/128	64/128
Bank 4	64/128	64/128	64/128	64/128

7.5. CONNECTIVITY

Connectivity	SCSI	parallel (DMS)	parallel 3M Interf.	parallel printer	Straight Ethernet
USIT					10/100 MBit
AC500/5000					10/100 MBit
AC3/3000 PCR9000 (DMS)		X			
Printers 3M Interf.			X		
Printers DICOM					10/100 MBit
Printers SCSI	X				
Printers postscript				X	

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